A13.27/9:221/952

TECHNICAL NOTE NUMBER 221

UNITED STATES DEPARTMENT OF AGRICULTURE FOREST SERVICE
FOREST PRODUCTS LABORATORY
MADISON 5, WISCONSIN
REVISED October 1952

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WEATHERING AND DECAY

Two slow but important deteriorating influences against which wood should be guarded in service are weathering and decay. Either of these actions, if permitted, will finally cause serious disintegration of the wood. Decay, when it occurs, is a more rapid form of deterioration than weathering. Weathering and decay should be clearly distinguished from each other because they differ with respect to the causes producing them, the conditions favoring them, and the methods effective in combating them.

Weathering is primarily due to the shrinking and swelling of wood with continual changes in moisture content. The surface layers of a shingle, board, or other piece of wood alternately absorb or lose moisture rapidly if exposed to rain and sunshine or to the ever-changing humidity of the atmosphere. Changes in moisture content inside the piece, however, lag behind those in the surface layers because of the relatively slow rate of transfusion of moisture in wood. The lag tends to keep the interior at a relatively uniform moisture content and a constant volume, so that when the outside wood fibers swell and shrink they are alternately squeezed together and pulled apart. This action results in a very slow breaking down and wearing away of the surface fibers, and sometimes more noticeably in "raising of the grain," checking, cracking, and splitting of the wood, cupping, warping, and pulling at fastenings. It may be augmented by the action of frost, by the mechanical abrasive effect of rain, hail, and wind, and by chemical changes in the wood substance brought about by the action of light, moisture, and oxygen. About 1/4 inch of wood wears away from the exposed surface in a century.

Decay, on the other hand, is caused by the action of wood-destroying fungi -- small living organisms that feed on the wood substance. The visible effect of the attack is familiar to everyone as "rotten" wood. Wood that is rotten, or decayed, has not been simply mechanically disintegrated as in weathering, but has been actually decomposed. Under conditions favorable to the development of decay organisms, the wood may be rendered unfit for service within a period of several months.

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Weathering and decay are not usually found in the same place. Wood that is dry will not rot, because the fungi must have water to live on. On the other hand, weathering is usually found where the boards as a whole remain fairly dry. The surface layers of such boards periodically take up moisture, but drying occurs before the water can penetrate to the interior of the wood.

Typical cases of weathering in wood can be found in old shingles, and in unpainted house siding, board fences, and outdoor seating. Decay is more common in the bottom of steps of porches, the bases of porch and pergola columns, the lowest boards of siding that runs to the ground, the butts of untreated posts and poles, and other wood that is used in contact with the ground or in damp, unventilated places.

Protection against weathering can be obtained by the use of paint, varnish coatings, or water-repellent preparations. Such coatings, although not impermeable to moisture, protect the wood enough to prevent rapid changes of moisture content in the surface layers. Paint and varnish do not preserve wood against decay. When wood must be used in places favorable to decay, a naturally durable wood should be selected, or, better yet, the wood should be impregnated with an effective preservative.

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